

CP Geometry Common Assessment 6 Review

QUADRILATERALS

- 1) Some parallelograms do **not** have
- a) opposite sides congruent
 - ☒ b) congruent diagonals
 - c) opposite angles congruent
 - d) diagonals that bisect each other
- 2) Some rectangles do **not** have
- a) four right angles
 - b) congruent diagonals
 - ☒ c) four congruent sides
 - d) diagonals that bisect each other
- 3) Some rhombi do **not** have
- a) opposite angles congruent
 - b) supplementary consecutive angles
 - ☒ c) four congruent angles
 - d) four congruent sides
- 4) In an isosceles trapezoid, the legs are
- a) parallel segments
 - ☒ b) congruent segments
 - c) perpendicular segments
 - d) bisector of each other
- 5) Chose the statements that **must** be true for a rectangle.
- I. The diagonals are congruent ✓ III. The diagonals are perpendicular
- II. The diagonals bisect each other. ✓ IV. The diagonals bisect the angles.
- ☒ a) I and II
 - b) I and III
 - c) I and IV
 - d) II and IV
 - e) I, II and IV
- 6) Chose the statements that **must** be true for a rhombus.
- I. The diagonals are congruent III. The diagonals are perpendicular ✓
- II. The diagonals bisect each other. ✓ IV. The diagonals bisect the angles. ✓

- a) I, II and III **b) II, III and IV** c) I, II and IV d) I, III and IV
e) none of these

- 7) Which of the following methods can be used to prove a quadrilateral is a parallelogram?

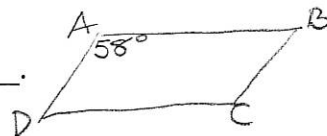
- I. Show that both pairs of opposite angles are congruent. ✓
II. Show that the diagonals are perpendicular
III. Show that both pairs of opposite sides are congruent. ✓
IV. Show that the diagonals bisect each other. ✓

- a) I, II and IV **b) I, III and IV** c) II, III and IV d) III and IV
e) all of these

- 8) If the lengths of the bases of a trapezoid are 19 and 33, then the length of the median is _____. $19 + 33 = 52$ $52 \div 2 = 26$

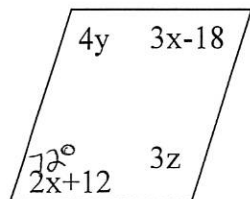
- a) 52 b) 14 **c) 26** d) 21 e) None of these.

- 9) In parallelogram ABCD, if $m\angle A = 58^\circ$, then $m\angle D =$ _____.



- a) 58 b) 32 c) 90 **d) 122** e) None of these.

- 10) Find the value of x, y, and z (in that order) for the given parallelogram.



$$\begin{aligned} 2x+12 &= 3x-18 & 4y &= 108 \\ 30 &= x & y &= 27 \\ 2(30)+12 &= 72 & 3z &= 108 \\ 180-72 &= 108 & z &= 36 \end{aligned}$$

- a) 30, 27, 36** b) 6, 27, 36 c) 30, 28, 36 d) 30, 27, 38

INDIRECT PROOF

11) If you interchange the hypothesis and the conclusion of a conditional, the result is called the ___?___ of the original conditional.

- a) contrapositive b) inverse ☒ c) converse d) counterexample

SIMILAR POLYGONS

12) If two polygons are similar then which of the following must be true?

- I. The corresponding sides are in proportion ✓
- II. The perimeters are equal.
- III. The corresponding sides are congruent.
- IV. The corresponding angles are congruent. ✓

- a) I and II ☒ b) I and IV c) II and III d) III and IV
e) IV only

13) If the corresponding angles of two polygons are congruent, then the polygons are ___?___ similar.

- a) always ☒ b) sometimes c) never

14) If $r : s = 3 : 7$, then $r : 3 =$ ___?___

- ☒ a) $s : 7$ b) $7 : s$ c) $r : 7$ d) $s : 3$ e) $7 : 3$

$$\frac{r}{s} = \frac{3}{7} \quad \rightarrow \quad \frac{r}{3} = \frac{s}{7}$$

15) The ratio of the measures of two supplementary angles is 1:3. Find the measure of the angles.

- ☒ a) 45, 135 b) 30, 90 c) 22.5, 67.5 d) 35, 145 e) None of these

$$x + 3x = 180$$

$$4x = 180$$

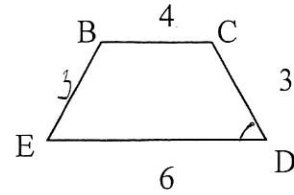
$$x = 45$$

$$3(45) = 135$$

For questions 16-19, use the diagram to complete the problems. Quad BCDE is similar to Quad. WXYZ.

$$\overline{BE} \cong \overline{CD}, \overline{BC} \parallel \overline{ED}, \angle D \cong \angle Y,$$

$$\overline{YZ} \parallel \overline{WX}, \overline{XY} \cong \overline{WZ}$$



16) Find the scale factor of BCDE to WXYZ $\frac{4}{6} = \frac{2}{3}$

- a) 3 to 2 b) 1 to 1 c) 1 to 2 **(d) 2 to 3**

17) Find the length of segment XY. $\frac{2}{3} = \frac{3}{x}$ $2x = 9$ $x = 4.5$

- a) 3 b) 2 **(c) 4.5** d) 6

18) Find $m\angle D$. $180 - 117 = 63$ $m\angle D = m\angle Y$

- (a) 63** b) 45 c) 117 d) cannot be determined

19) Find the perimeter of Quad WXYZ. $\frac{2}{3} = \frac{6}{YZ}$ $2YZ = 18$ $YZ = 9$

- (a) 24** b) 23 c) 16 d) None of these

20) If $\triangle QRS \sim \triangle XYZ$, $QR = 9$, $RS = 12$, $QS = 14$ AND $YZ = 18$, then the scale factor of $\triangle QRS$ to $\triangle XYZ$ is $\frac{12}{18} = \frac{2}{3}$

- a) 1 : 2 **(b) 2 : 3** c) 7 : 9 d) 3 : 4 e) none of these

PROPORTIONAL LENGTHS

21) If $CE = 12$, then $BD = \underline{\hspace{1cm}}$

$$\frac{8}{20} = \frac{4}{x}$$

$$8x = 80$$

$$x = 10$$

a) 4 b) 8 **(c) 6** d) 9

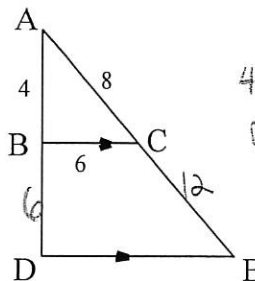
22) If $BD = 8$, then $DE = \underline{\hspace{1cm}}$

$$\frac{4}{12} = \frac{6}{x}$$

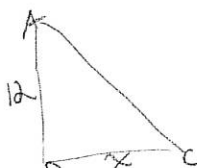
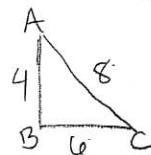
$$4x = 72$$

$$x = 18$$

a) 12 b) 16 c) 14 **(d) 18**



Questions 21, 22



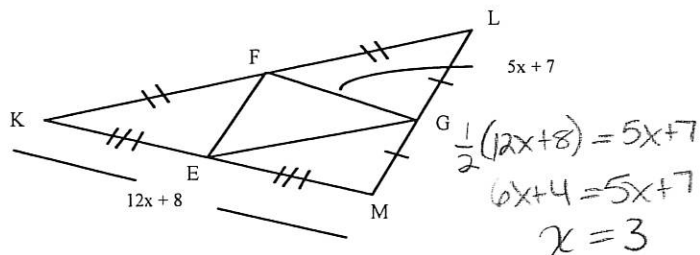
23) Use the diagram below to find FG.

- a) 3 d) 44
b) 6 e) 7

(c) 22

$$FG = 5x + 7$$

$$FG = 5(3) + 7$$



24) Use the diagram and given information to find JN.

a) 9.6

(b) 21.6

c) 12

d) 10

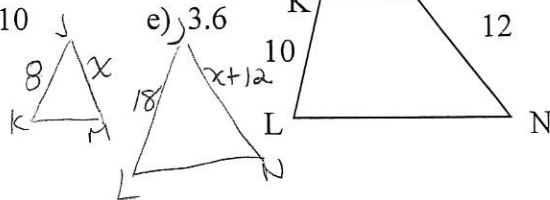
e) 3.6

$$\frac{8}{18} = \frac{x}{x+12}$$

$$8x + 96 = 18x$$

$$96 = 10x$$

$$x = 9.6$$



RIGHT TRIANGLES

25) Find the geometric mean between $\frac{1}{2}$ and $\frac{2}{5}$.

a) 5

b) $\frac{\sqrt{5}}{5}$

c) $\frac{\sqrt{1}}{5}$

d) $\frac{\sqrt{5}}{2}$

26) The lengths of the legs of a right triangle are 5 and 12. Find the length of the hypotenuse.

a) 17

b) 15

(c) 13

d) $\sqrt{119}$

e) None of these

27) One leg of a right triangle has length $2\sqrt{3}$. The hypotenuse has length $5\sqrt{2}$. Find the length of the other leg,

a) 2

b) $\sqrt{62}$

c) 5

(d) $\sqrt{38}$

e) None of these

$$a^2 + b^2 = c^2$$

$$(2\sqrt{3})^2 + b^2 = (5\sqrt{2})^2$$

$$12 + b^2 = 50$$

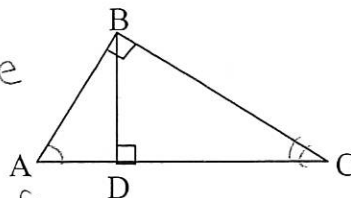
$$\sqrt{b^2} = \sqrt{38}$$

Use the given diagram to answer problems 28-33

28) If $AB = 6$ and $BC = 8$, then $AC =$ ___?___

a) 9

(b) 10

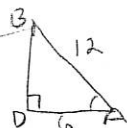
c) $2\sqrt{7}$ d) $9\sqrt{5}$ 3-4-5
Triangle

Questions 28 - 33

29) If $AB = 12$ and $AD = 6$, then $DC =$ ___

a) 3

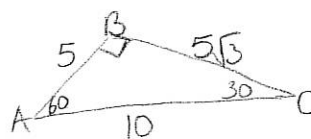
b) 18



d) 30

30) If $AD = 3$ and $DC = 6$, then $AB =$ ___a) $3\sqrt{2}$

b) 4.5

c) $3\sqrt{6}$ d) $3\sqrt{3}$ 31) If $m\angle A = 60^\circ$ and $AB = 5$, then $BC =$ ___?___(a) $5\sqrt{3}$ b) $5\sqrt{2}$ 

c) 10

d) 5

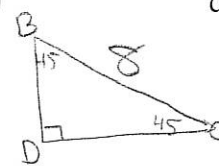
32) If $m\angle DBC = 45^\circ$ and $BC = 8$, then $BD =$ ___?___

a) 8

b) 16

(c) $4\sqrt{2}$

d) 4



$$\frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{8\sqrt{2}}{2}$$

33) If $m\angle A = 45^\circ$, $m\angle C = 30^\circ$, and $DC = 6\sqrt{3}$, then $AB =$ ___Not possible if $\angle B$ is 90°

a) 36

b) $12\sqrt{6}$ c) $3\sqrt{6}$ d) $6\sqrt{2}$

34) A triangle with sides of lengths 8, 9, and 12 is a(n) ___?___ triangle.

(a) acute

b) right

c) obtuse

d) equiangular

$$12^2 ? 8^2 + 9^2$$

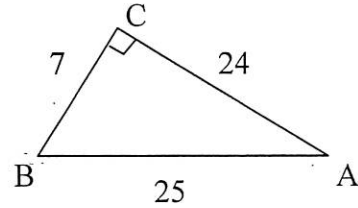
$$144 ? 64 + 81$$

$$144 < 145$$

$$c^2 < a^2 + b^2$$

TRIGONOMETRY SOH CAH TOA

Use the given diagram to express the ^{trig}~~trig~~ function as a ratio.



35) In $\triangle ABC$, $\tan B = \underline{\hspace{1cm}}?$

Questions 35 - 37

a) $\frac{24}{7}$

b) $\frac{25}{7}$

c) $\frac{7}{24}$

d) $\frac{24}{25}$

36) In $\triangle ABC$, $\sin A = \underline{\hspace{1cm}}?$

a) $\frac{7}{24}$

b) $\frac{7}{25}$

c) $\frac{24}{25}$

d) $\frac{24}{7}$

37) In $\triangle ABC$, $\cos B = \underline{\hspace{1cm}}?$

a) $\frac{24}{7}$

b) $\frac{25}{7}$

c) $\frac{7}{25}$

d) $\frac{24}{25}$

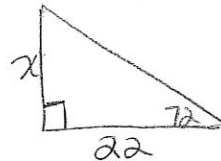
38) At 2 P.M. the shadow of a lighthouse is 22 feet long and the angle of elevation is 72 degrees. Find the height of the lighthouse.

a) 25 feet

b) about 7 feet

c) about 21 feet

d) about 68 feet



$\tan 72 = \frac{x}{22}$

39) A tree stands in the shadow of a flagpole as shown below. The ends of the shadows of the pole and the tree coincide. The pole's shadow is 7.2 meters long and the tree's shadow is 2.7 meters long. If the tree is 1.8 meters tall, find the height of the pole.

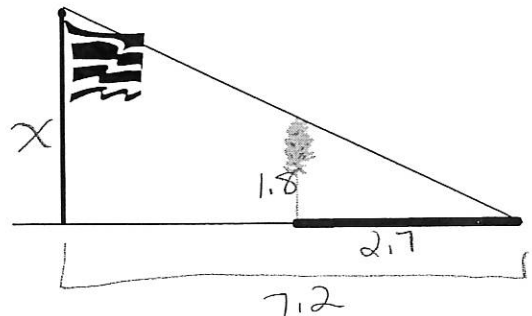
a) 3 meters

b) 6.3 meters

c) 4.8 meters

d) 6.75 meters

$\frac{2.7}{7.2} = \frac{1.8}{x}$
 $2.7x = 12.96$



CIRCLES

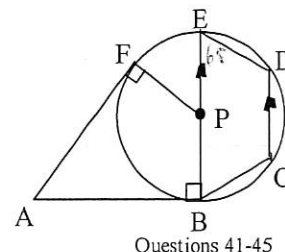
40) A segment whose endpoints are points of a circle must be a ___?___ and can be a ___?___.

- (a) chord, secant b) diameter, radius c) secant, chord (d) chord, diameter

Use the diagram to answer problems 41 – 45.

41) In circle P, if $m\angle E = 65^\circ$, then $m\angle C =$ ___?___

- a) 65 (b) 115 c) 135
d) 130 e) none of these



42) Which of the following is NOT a radius?

- (a) \overline{ED} b) \overline{PE} c) \overline{PF} d) \overline{PB} e) all are radii.

43) Which one of the following represents a chord?

- a) \overline{AB} b) \overline{AF} c) \overline{PF} (d) \overline{CD} e) None of these

44) Which one of the following represents a tangent?

- (a) \overline{AB} (b) \overline{AF} c) \overline{EB} d) \overline{CD} e) None of these

45) In circle P, which of the following segments must be congruent?

- I. \overline{BC} and \overline{CD} II. \overline{BE} and \overline{CD}
III. \overline{AB} and \overline{AF} IV. \overline{BP} and \overline{PF}

- a) II and IV (b) III and IV c) I, II, and III d) II, III, and IV e) all of these

In questions 46 – 50, O is the center of the circle, $m\widehat{AE} = 100$, $m\widehat{AB} = 30$ and $m\widehat{BC} = 80$

46) $m\angle 1 = \underline{\hspace{1cm}}?$

a) 20

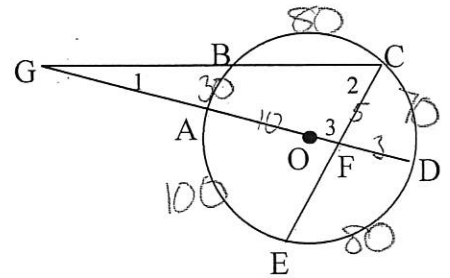
b) 30

c) 40

d) 50

e) none of these

$$m\angle 1 = \frac{1}{2}(70 - 30) = \frac{1}{2}(40)$$



Questions 46 - 50

47) $m\angle 2 = \underline{\hspace{1cm}}?$ $m\angle 2 = \frac{1}{2}(130)$ inscribed angle

a) 90

b) 130

c) 65

d) 60

e)

none of these

48) $m\angle 3 = \underline{\hspace{1cm}}?$ $20 + 65 + x = 180$
 $x = 95$

a) 60

b) 65

c) 70

d) 90

e)

none of these

49) If $AF = 10$, $FD = 3$, and $CF = 5$, then $EF = \underline{\hspace{1cm}}$.

a) 26

b) 11

c) 15

d) 6

e) None of these

$$5x = 10(3)$$

$$5x = 30$$

50) If $GC = 12$, $GB = 4$, and $GA = 3$, then $GD = \underline{\hspace{1cm}}$. $\text{outside} \cdot \text{whole} = \text{outside} \cdot \text{whole}$
 $4(12) = 3(x)$
 $48 = 3x$

a) $11\frac{2}{3}$

b) $14\frac{2}{3}$

c) 16

d) 9

e) None of these

51) If an equilateral triangle ABC is inscribed in a circle, what is the measure of \widehat{AC} ?

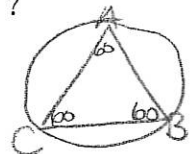
a) 90

b) 120

c) 60

d) 180

e) None of these.



52) In a circle with radius 10 inches, a chord is drawn 6 inches from the center. How long is the chord?

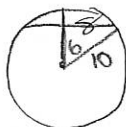
a) 8 in.

b) 24 in.

c) 16 in.

d) 12 in

e) None of these.



$$6^2 + x^2 = 10^2$$

$$x^2 = 64$$

$$x = 8$$

PERIMETER AND AREA

53) The area of a circle with radius 10 is ___?

$$A = \pi r^2$$

$$= \pi 10^2$$

- a) 100π b) 200π c) 20π d) 40π e) None of these

54) The circumference of a circle with diameter 7.

$$C = 2\pi r$$

$$= 2\pi 3.5$$

- a) 49π b) 14 c) 3.5π d) 7π e) None of these

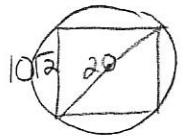
55) The area of a trapezoid with height 10 and bases 9 and 13 is ___?

$$A = \frac{1}{2}h(b_1 + b_2)$$

$$A = \frac{1}{2}(10)(9 + 13)$$

- a) 55 b) 220 c) 110 d) $27\frac{1}{2}$ e) None of these

56) A square is inscribed in a circle of radius 10. What is the area of the square?



- a) 100 b) 200 c) 400 d) $100\sqrt{2}$ e) none of these
- $$A = s^2$$
- $$A = (10\sqrt{2})^2$$

57) One side of a rectangle has length 12 and the rectangle has area 60. What is its perimeter of the rectangle?

$$A = lw$$

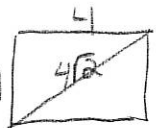
$$60 = 12w$$

$$w = 5$$

$$P = 2l + 2w$$

$$P = 2(12) + 2(5)$$

- a) 17 b) 30 c) 34 d) 35 e) none of these

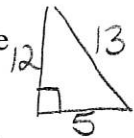
58) A square has a diagonal with length $4\sqrt{2}$. What is the area of the square?

- a) 32 b) 16 c) 64 d) $16\sqrt{2}$ e) none of these
- $$A = 4^2$$

59) Find the area of a right triangle with a leg having length 5 and the hypotenuse having length 13.

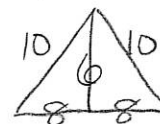
$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}5(12)$$



- a) 32.5 b) 60 c) 30 d) 20 e) none of these

60) Find the area of an isosceles triangle with sides 10, 10, 16.



- a) 48 b) 50 c) 96 d) $64\sqrt{2}$ e) none of these

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}16(6)$$

$$A = 48$$

61. Area of square **B**

A. length times width

62. Area of rectangle **A**

B. side times side

63. Area of parallelogram **E**

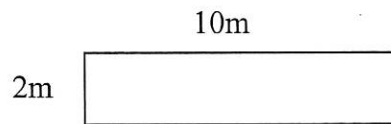
C. 2 times length + 2 times width

64. Perimeter of square **D**

D. 4 times length of side

65. Perimeter of rectangle **C**

E. base times altitude



66. What is the area of the figure above?

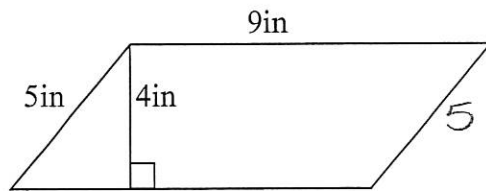
$$A = bh$$

$$A = 20m^2$$

67. What is the perimeter of the figure above?

$$P = 2(2) + 2(10)$$

$$P = 24m$$



68. What is the area of the figure above?

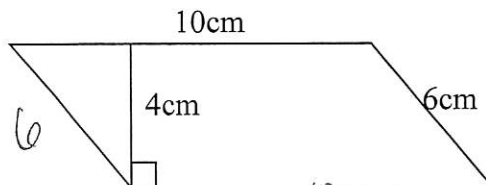
$$A = bh$$

$$A = 9(4)$$

$$A = 36in^2$$

69. What is the perimeter of the figure above?

$$P = 28in$$



70. What is the area of the figure above?

$$A = bh$$

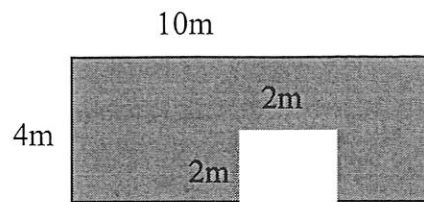
$$A = 10(4)$$

$$A = 40cm^2$$

71. What is the perimeter of the figure above?

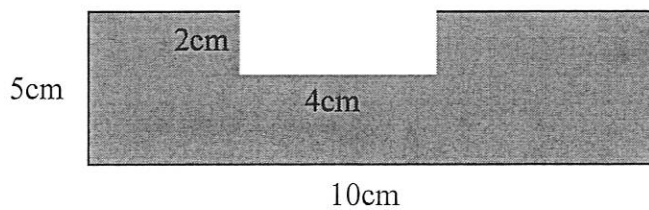
$$P = 32cm$$

72. What is the area of the shaded region?



$$\begin{aligned}
 A &= bh & A &= s^2 \\
 A &= 10(4) & A &= 2^2 \\
 A &= 40m^2 & A &= 4m^2 \\
 40 - 4 &= \boxed{36m^2}
 \end{aligned}$$

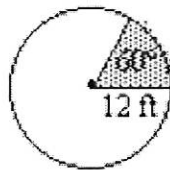
73. What is the area of the shaded region?



$$\begin{aligned}
 A &= bh & A &= bh \\
 A &= 5(10) & A &= 2(4) \\
 A &= 50cm^2 & A &= 8cm^2 \\
 50 - 8 &= \boxed{42cm^2}
 \end{aligned}$$

Find the area of the shaded sector to the nearest whole number.

74.



$$\begin{aligned}
 A &= \frac{\theta}{360} \pi r^2 \\
 &= \frac{60}{360} \pi (12)^2 \\
 &= 24\pi \\
 &\approx \boxed{75ft^2}
 \end{aligned}$$

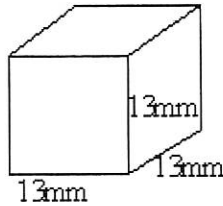
75.



$$\begin{aligned}
 A &= \frac{\theta}{360} \pi r^2 \\
 &= \frac{45}{360} \pi (13)^2 \\
 &\approx \boxed{66ft^2}
 \end{aligned}$$

3D FIGURES

76.

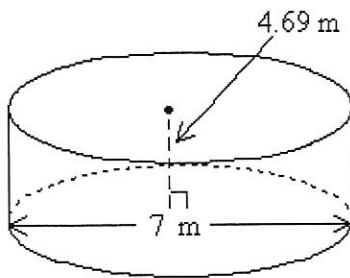
Find the volume of the solid. Round to the nearest hundredth, if necessary.

$$V = s^3$$

$$V = 13^3$$

$$V = 2197 \text{ mm}^3$$

77.

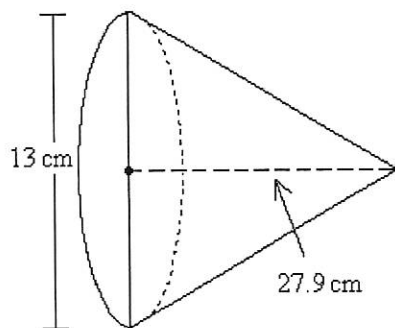
Find the volume of the cylinder. Use 3.14 for π and round to the nearest hundredth, if necessary.

$$V = \pi r^2 h$$

$$= (3.14)(3.5)^2 4.69$$

$$V \approx 180.40 \text{ m}^3$$

78.

Find the volume of the cone. Use 3.14 for π and round the answer to the nearest hundredth, if necessary.

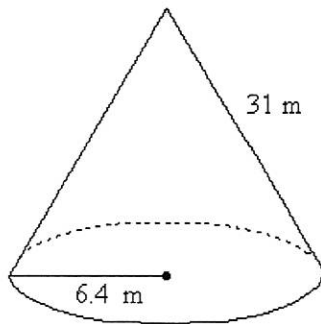
$$V = \frac{1}{3} \pi r^2 h$$

$$= \frac{1}{3} (3.14)(6.5)^2 (27.9)$$

$$V \approx 1233.78 \text{ cm}^3$$

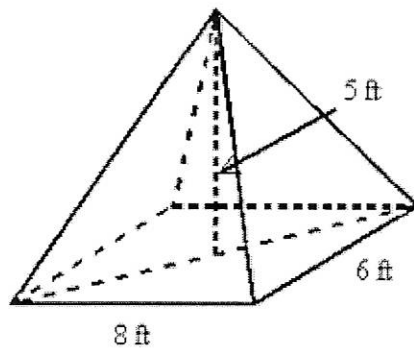
79.

Find the lateral area and the surface area of the cone. Use 3.14 for π and round the answer to the nearest hundredth.



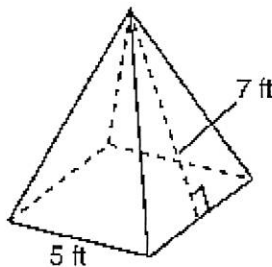
$$\begin{aligned}
 LA &= \pi r l & SA &= \pi r^2 + \pi r l \\
 &= \pi(6.4)(31) & &= \pi(6.4)^2 + 622.98 \\
 LA &= 622.98 \text{ m}^2 & SA &= 128.61 + 622.98 \\
 & & SA &= 751.59 \text{ m}^2
 \end{aligned}$$

80. The pyramid shown has a rectangular base and faces that are isosceles triangles. Find its volume.



$$\begin{aligned}
 V &= \frac{1}{3} (\text{area of base}) h \\
 &= \frac{1}{3} (48)(5) \\
 V &= 80 \text{ Ft}^3
 \end{aligned}$$

81. The pyramid shown has a square base and a slant height of 7 ft. Find its surface area.



$$\begin{aligned}
 SA &= (\text{Area of Base}) + \frac{1}{2} (\# \text{ of sides}) b l \\
 &= 25 + \frac{1}{2} (4)(5)(7) \\
 SA &= 95 \text{ Ft}^2
 \end{aligned}$$

82. Describe what happens to the volume of a cylinder if its radius is doubled while its height is halved.

The volume is doubled. $V = \pi r^2 h$ $V = \pi (2r)^2 \frac{h}{2}$
 $V = \pi 4r^2 \frac{h}{2}$
 $V = 2\pi r^2 h$

83. For which length and width is the perimeter maximized for a figure with an area of 24 square units?

$$P = 2l + 2w$$

- a. Length = 3, width = 8
- b. Length = 2, width = 12
- c. Length = 1, width = 24
- d. Length = 6, width = 4

$$P = 22$$

$$P = 28$$

$$P = 49$$

$$P = 20$$

84. To the nearest cubic foot, a cylindrical natural gas storage tank with a diameter of 10 feet holds 2260 cubic feet of gas.

$$V = \pi r^2 h \quad h \approx 284 \text{ ft}$$

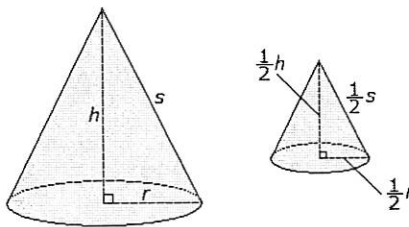
To the nearest cubic foot, what is the approximate volume of an equally tall tank if it has a diameter of 20 feet?

$$2260 = \pi (5)^2 h$$

$$V = \pi (10)^2 (284)$$

$$V = 28400\pi \text{ ft}^3$$

85.



If the larger cone has a surface area of 602.88 cm^2 , what is the surface area of the smaller cone?

$$SA = \pi r^2 + \pi r l$$

$$SA = \pi \left(\frac{1}{2}r\right)^2 + \pi \left(\frac{1}{2}r\right)\left(\frac{1}{2}l\right)$$

$$SA = \pi \frac{1}{4} r^2 + \frac{1}{4} \pi r l$$

$$SA = \frac{1}{4} (\pi r^2 + \pi r l)$$

$$SA = \frac{1}{4} (602.88)$$

$$SA = 150.72 \text{ cm}^2$$

COORDINATE GEOMETRY

86. Find the distance between the points (1,-8) and (-7,-2).

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(-7-1)^2 + (-2+8)^2}$$

$$d = \sqrt{(-8)^2 + 6^2}$$

$$d = \sqrt{64 + 36}$$

$$d = \sqrt{100} = 10$$

87. Determine the coordinate of the midpoint of
- \overline{GH}
- and find the approximate distance of
- \overline{GH}
- for the points
- $G(-6,-7)$
- and
- $H(3,6)$
- .

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$M = \left(\frac{-6+3}{2}, \frac{-7+6}{2} \right)$$

$$M = \left(-\frac{3}{2}, -\frac{1}{2} \right)$$

$$d = \sqrt{(3+6)^2 + (6+7)^2}$$

$$d = \sqrt{81 + 169}$$

$$d = 5\sqrt{10}$$

88. Find the slope of the line that passes through the points A (-1,5) and B (7,1)

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{1-5}{7-(-1)} = \frac{-4}{8} = -\frac{1}{2}$$

$$m = -\frac{1}{2}$$

89. Find the slope of a line perpendicular to the line containing the points (3,-7) and (4,-3).

$$m = \frac{-7+3}{3-4}$$

$$m = \frac{-4}{-1} = 4$$

perpendicular slope $m = -\frac{1}{4}$
 opposite reciprocal

90. Tell whether the lines through the given points are parallel, perpendicular or neither. Explain.

Line 1: (2,2) and (-4,5) $m = \frac{5-2}{-4-2} = \frac{3}{-6} = -\frac{1}{2}$

Line 2: (4,-9) and (-6,-4) $m = \frac{-4+9}{-6-4} = \frac{5}{-10} = -\frac{1}{2}$

Parallel lines same slope

91. Write an equation that is parallel to
- $y = 5x + 3$
- .

$$y = 5x + 5$$

can be any number
must be 5

92. What is the slope of a line perpendicular to the line
- $-4x + 9y = 8$
- ?

$$9y = 4x + 8$$

$$y = \frac{4}{9}x + \frac{8}{9}$$

$$m = -\frac{9}{4}$$